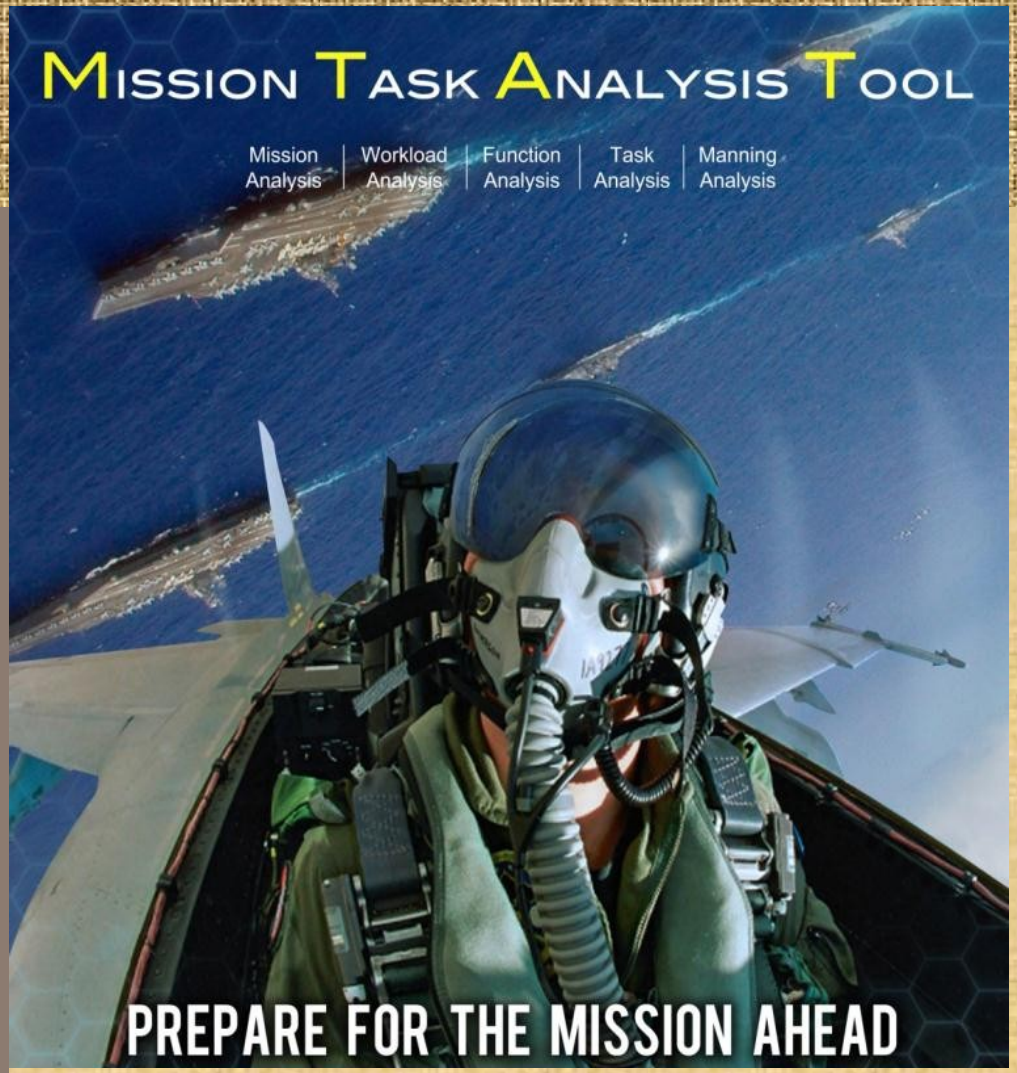

Mission Task Analysis Tool • Mission Task Analysis Tool • Mission Task Analysis Tool • Mission Task Analysis Tool

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Systems Engineers and Human Systems Analysts need to maximize utilization of system resources (technical and personal) that meet mission scenarios.

In response, NAVAIR 4.6 has developed a tool called the Mission Task Analysis Tool (MTAT).

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Purpose of doing a Mission Task Analysis

Perform a comprehensive system engineering process to examine the **contribution of** and **impact on** the resources within your system.

Considers the:

- Mission context and operational scenarios
- System functionality
- Tasks and activities
- System resources (Human and Technical)
- Resource Capabilities (KSAs)

MISSION TASK ANALYSIS

Benefits of Mission Task Analysis

Impact, Design, and Training inputs

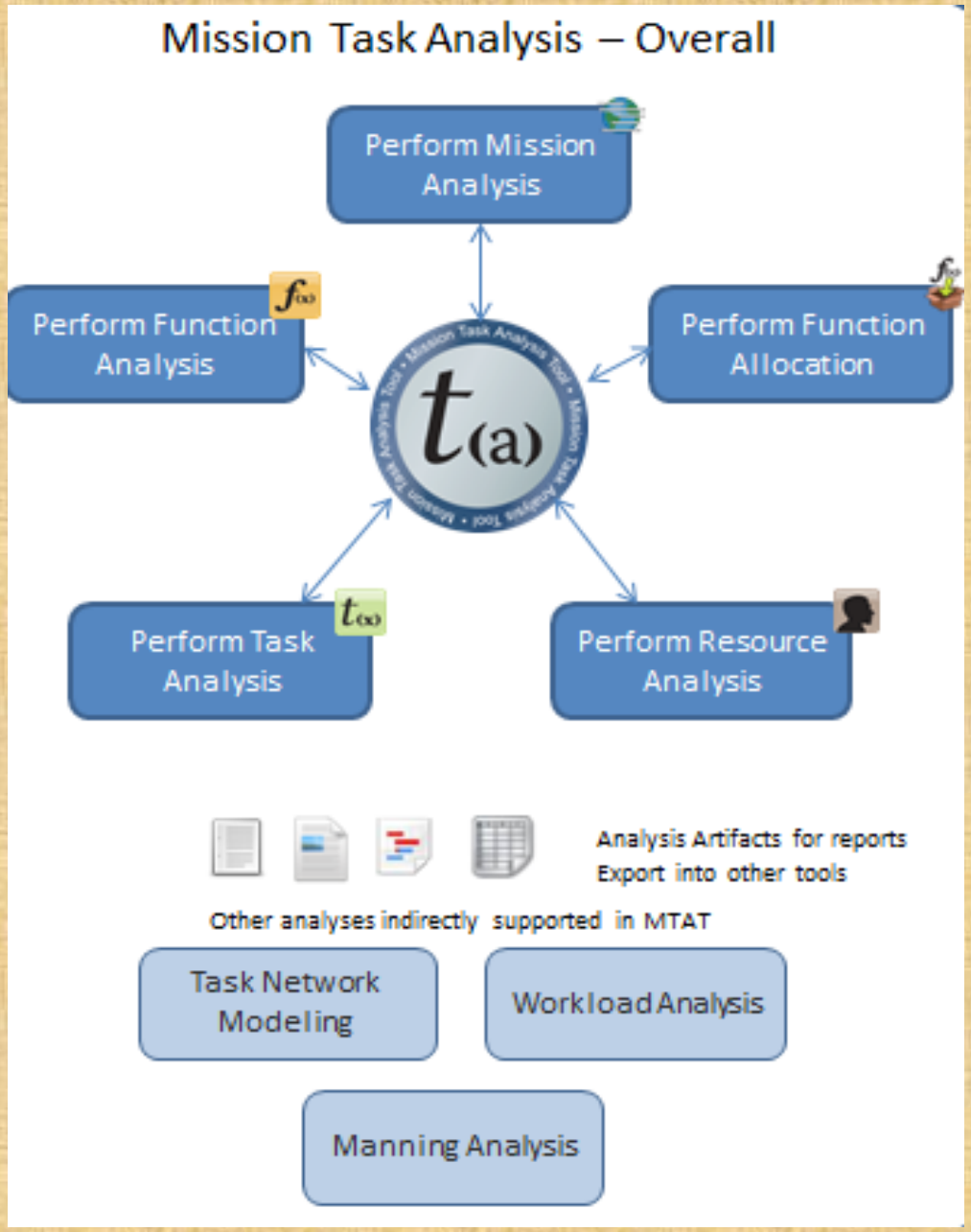
- Analyze utilization across scenario timelines
- Document tasks necessary to perform functions
- Capture capability requirements (KSAs) for tasks and resources

Scalability of Analysis

- Focus on key areas for analysis
- Do as much or as little as needed
- Add to and expand your analysis where necessary
- Tools exist to facilitate and manage the data (MTAT)

SCALABILITY OF THE PROCESS

MISSION TASK ANALYSIS TOOL



The MTAT is a software tool that supports individuals and teams conducting task analyses.

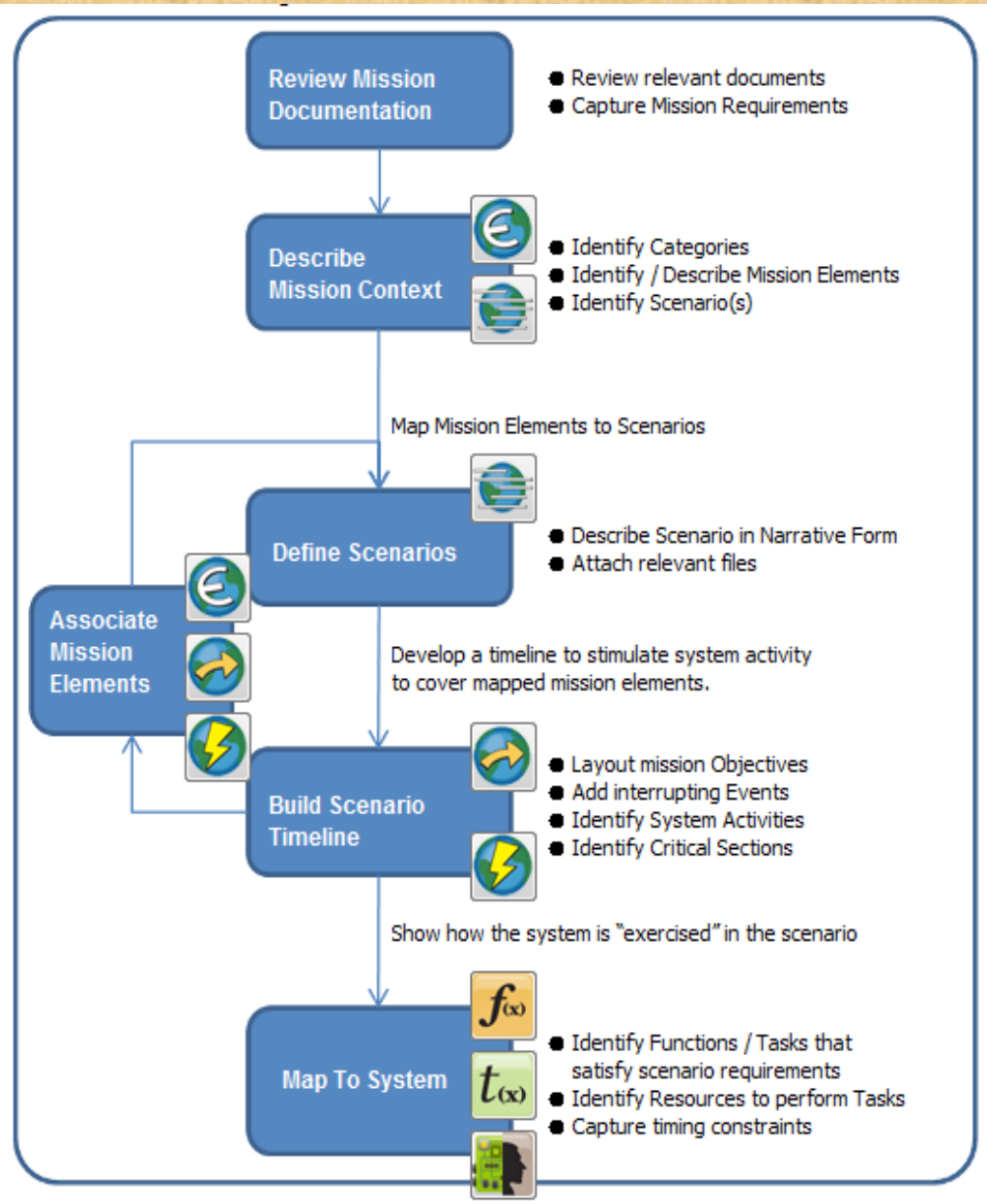
MTAT provides an integrated workspace to pull together the various contributors to your task analysis.

Modules of MTAT:

- **Mission Analysis**
- **Function Analysis**
- **Function Allocation**
- **Task Analysis**
- **Resource Analysis**

MISSION TASK ANALYSIS TOOL

MISSION ANALYSIS COMPONENTS


Review Mission Documentation
Review relevant documents
Capture Mission Requirements
Describe Mission Context
Identify Categories
Identify / Describe Mission Elements
Identify Scenario(s)
Map Mission Elements to Scenarios
Define Scenarios
Describe Scenario in Narrative Form
Attach relevant files
Associate Mission Elements
Develop a timeline to stimulate system activity to cover mapped mission elements.
Build Scenario Timeline
Layout mission Objectives
Add interrupting Events
Identify System Activities
Identify Critical Sections
Show how the system is "exercised" in the scenario
Map To System
Identify Functions / Tasks that satisfy scenario requirements
Identify Resources to perform Tasks
Capture timing constraints

Overview

Purpose: to provide the contextual framework for a task analysis.

Process:

Identify and describe

- **Mission elements**
- **Mission scenarios (design reference scenarios)**
- **and textual narratives.**

MTAT provides two methods for performing Mission Analysis.

First - the identification of mission elements.

Second - the development of design reference scenarios.

MISSION ANALYSIS MODULE

Function Analysis Overview

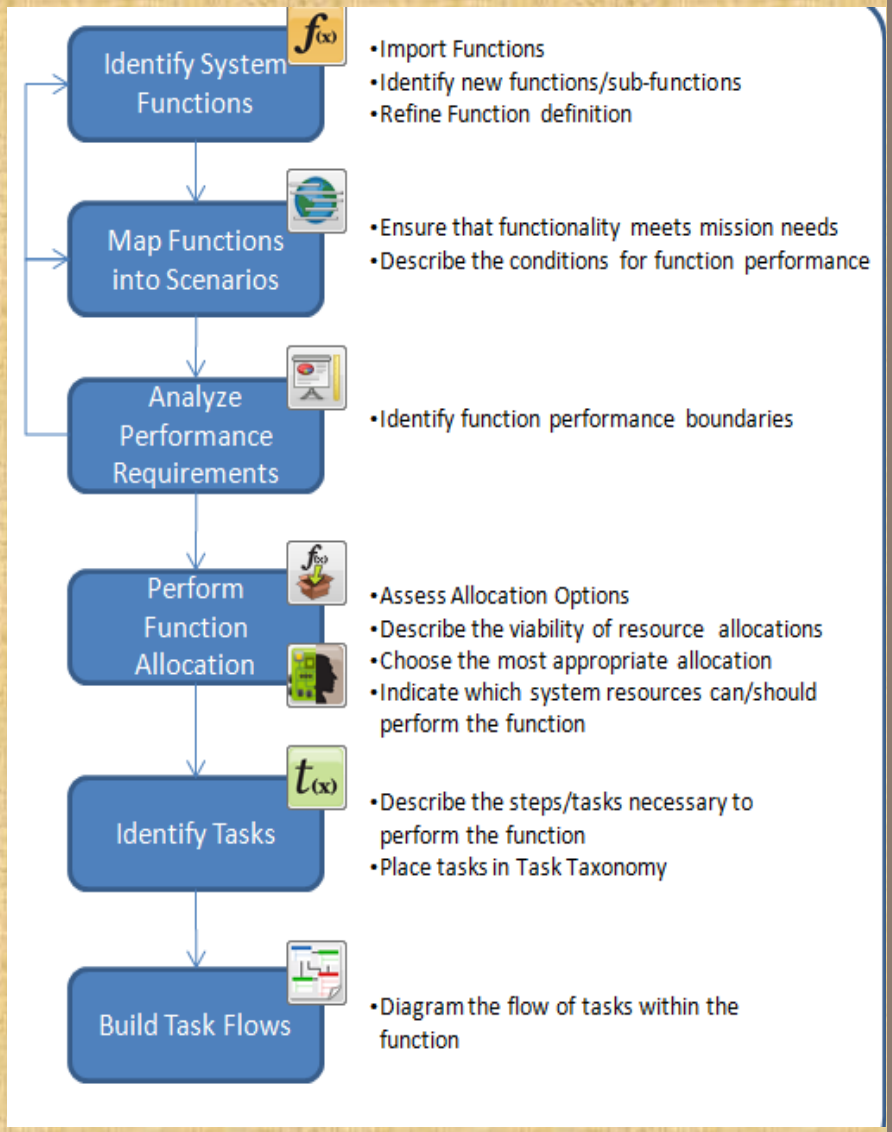
Purpose: to describe and capture the functionality, or requirements, of the system.

Process:

- Identify or import Functions
- Map them onto scenario(s)
- Identify Performance Requirements
- Perform Function Allocation
- Identify Tasks
- Develop Task Flows

- Information can be populated in any order as they become apparent to the analyst.

Function Analysis Graphic Organizer


Identify System Functions
•Import Functions
•Identify new functions/sub-functions
•Refine Function definition
Map Functions into Scenarios
•Ensure that functionality meets mission needs
•Describe the conditions for function performance
Analyze Performance Requirements
•Identify function performance boundaries
Perform Function Allocation
•Assess Allocation Options
•Describe the viability of resource allocations
•Choose the most appropriate allocation
•Indicate which system resources can/should perform the function
Identify Tasks
•Describe the steps/tasks necessary to perform the function
•Place tasks in Task Taxonomy
Build Task Flows
•Diagram the flow of tasks within the function

FUNCTION ANALYSIS MODULE

Task Analysis Overview

Purpose: to examine the tasks and their impact on system resources.

Process:

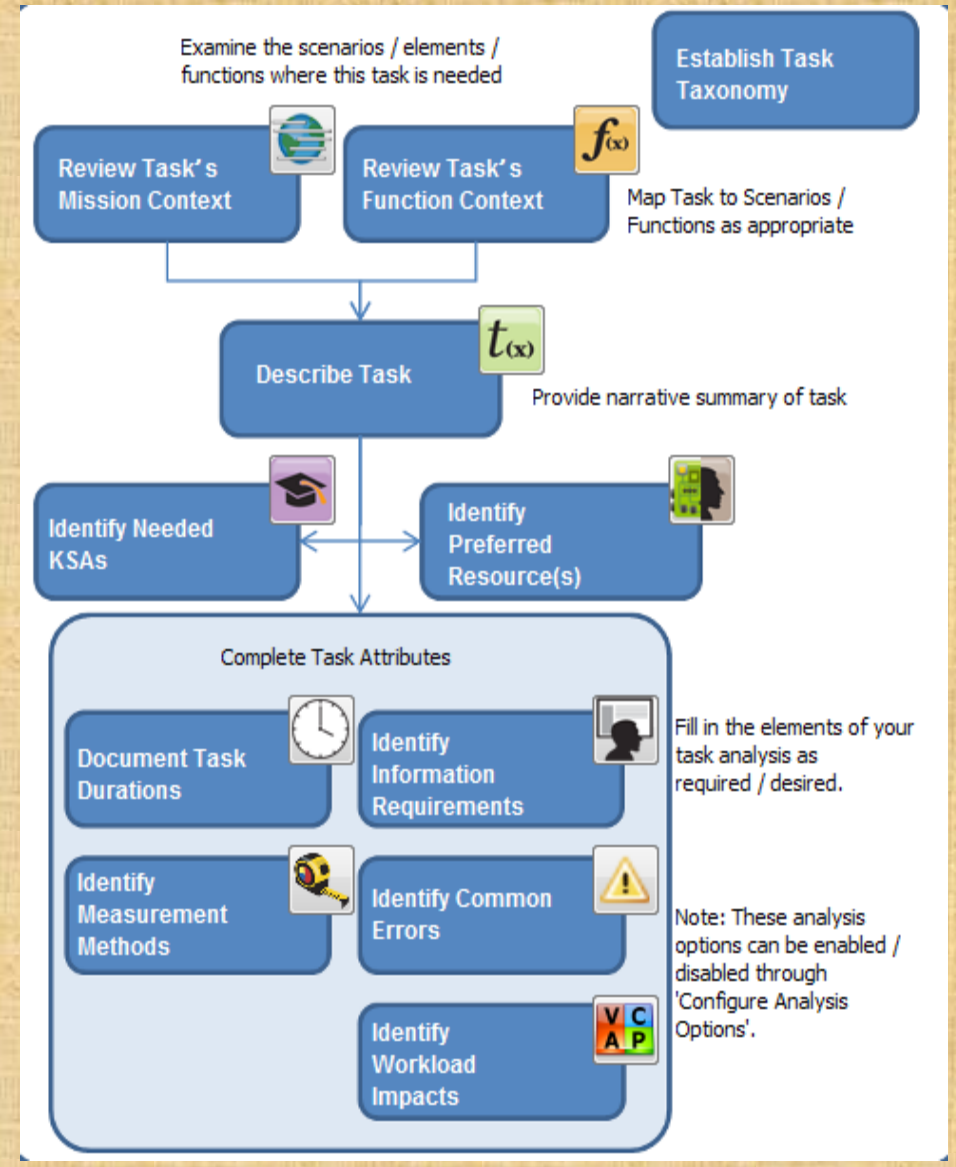
- Capture and Document tasks
- Examine their mission context
- Describe how tasks are accomplished (time, KSAs, etc.)
- Determine what is required to prepare resources to perform those tasks

Tasks are the things that resources do to satisfy some objective.

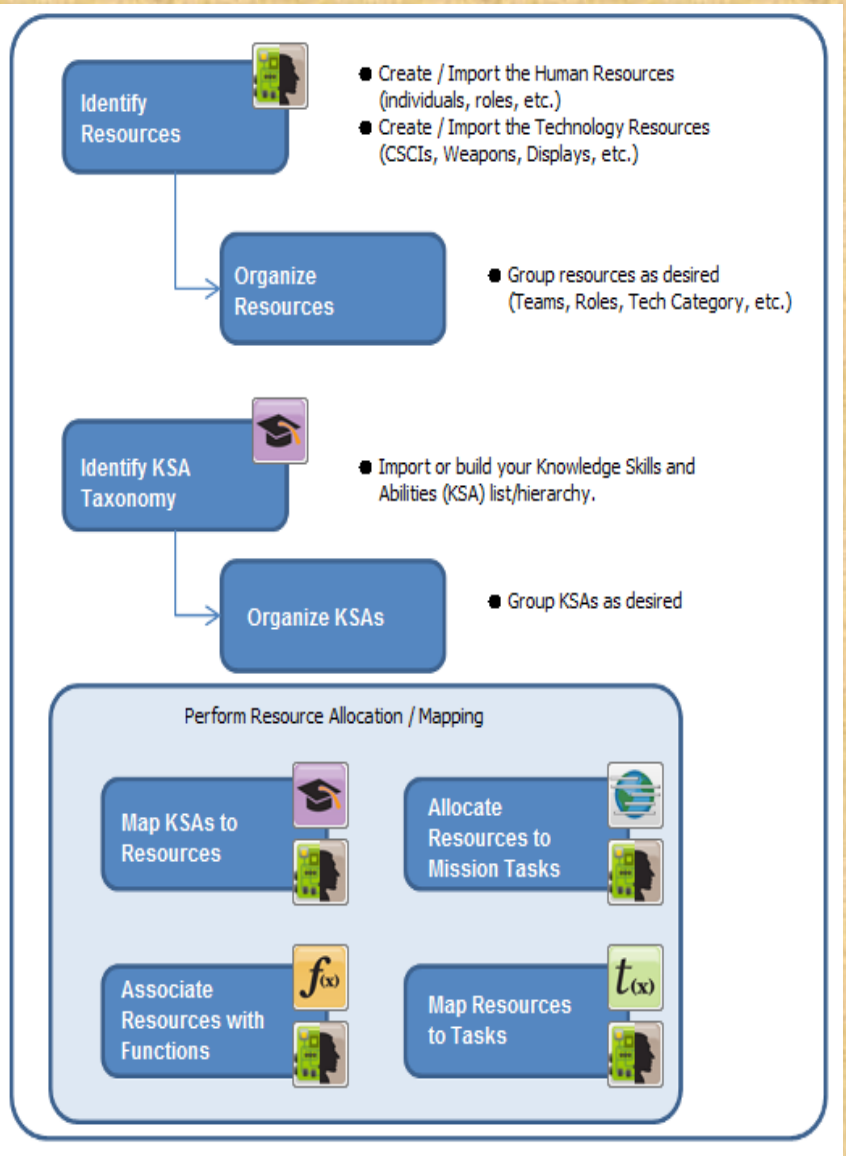
Tasks can be associated in a mission context through the scenario timeline, or to system functions as task flows.

MTAT provides many attributes to support task analysis: If your project does not require all of them, do not use them.

Task Analysis Graphic Organizer


Examine the scenarios / elements / functions where this task is needed
Establish Task Taxonomy
Review Task's Mission Context
Review Task's Function Context
Map Task to Scenarios / Functions as appropriate
Describe Task
Provide narrative summary of task
Identify Needed KSAs
Identify Preferred Resource(s)
Complete Task Attributes
Document Task Durations
Identify Information Requirements
Identify Measurement Methods
Identify Common Errors
Identify Workload Impacts
Fill in the elements of your task analysis as required / desired.
Note: These analysis options can be enabled / disabled through 'Configure Analysis Options'.

Resource Analysis Graphic Organizer


Identify Resources
Create / Import the Human Resources (individuals, roles, etc.)
Create / Import the Technology Resources (CSCIs, Weapons, Displays, etc.)
Organize Resources
Group resources as desired (Teams, Roles, Tech Category, etc.)
Identify KSA Taxonomy
Import or build your Knowledge Skills and Abilities (KSA) list/hierarchy.
Organize KSAs
Group KSAs as desired
Perform Resource Allocation / Mapping
Map KSAs to Resources
Allocate Resources to Mission Tasks
Associate Resources with Functions
Map Resources to Tasks

Resource Analysis Overview

<u>Purpose</u>: to identify and organize resources and the necessary a Knowledge, Skills and Abilities within a logical hierarchy

<u>Process</u>:

- **Identify human and technology resources**
- **Allocate resources across the system**
- **Identify resource KSA requirements**

Mission Analysis

- Mission Element List
- Mission Element Matrix

- Scenario List
- Critical Segments

Function & Task Analysis

- System Function List
- Function Allocation Matrix

- Task List
- Task Input & Output Report
- Task Load

Resources & KSAs

- Resource List
- Scenario Resource Matrix

- KSA List

MTA TREPORTS

l types of reports can be generated from a completed MTAT analysis. le of a mission, a function, and a resource report are provided on the ree slides.

Additional reports and analysis in progress

Sample Mission Reports

Mission Element List

1 Geopolitical

The political situations across the globe that effect the manner in which the operation is accomplished.

1.1 Peacetime

PLMS mission will occur during peacetime in friendly airspace. No specific threats have been encountered.

Related Scenarios:

Id	Name	Description
1	Long-Dwell Surveillance	Mission is to detect, identify, track and report to the Tacti all surface vessels approaching a busy shipping lane from t crew shall classify and identify targets of interest as dictat scenario.

1.2 Peacetime (But with a ristriction)

PLMSmission will occur during peacetime in friendly airspace. Recent flights have activity over AOR. No specific threats have been encountered but indications lea US and allied vessels. US carrier strike group deployed to the region requires lon Littoral country has granted permission for PLMS to fly over its airspace only thro corridors. The only surveillance permitted during flight in the overland corridors The friendly country does not allow overland imagery. While transiting through required to communicate with friendly nation's ACA.

Related Scenarios:*(None)*

Mission Element Matrix

Enemy Order of Battle

Mission Elements	Scenario Coverage	PLMS Support for Amphibious Assault	Retasking	Long-Dwell Surveillance	Data Mission
None	1 / 4			x	
HVT Civilian Transport	None Fulfilled				
Light Navy & Pirates	None Fulfilled				
Light Aircraft	1 / 4				x
Pirates	1 / 4		x		
Hidden	None Fulfilled				
Light-Regiment Sized Force(Artillery, Armor, Transport, Limited SAM)	1 / 4	x			
Large Armored Division	None Fulfilled				
Long range Naval detachment	None Fulfilled				
Naval Patrol	None Fulfilled				

MTA TREPORTS

Sample Function Report

Function List

1 Take off

Function Allocation: (None)

Name	Feasibility	Comment
Direct Performer		
Manual Controller		
Supervisory Controller		
Executive Controller		

Source Document: *(None)*

Performance Description: *(None)*

Relates To:

Task	Resource
1. Engine System Start Up	*1.* PLMS
2. Camera System Start Up	*2.* Pilot
21. Loading of Additional Systems	*6.* P-A
	8. ACR

Function Allocation Matrix

Id	Function	Direct Performer	Manual Controller	Supervisory Controller	Executive Controller
1	Take off		x		
2	Mission Launch and arrive on station	x			
3	Crew switch				
4	Monitor Area			x	
4.1	Monitor and Search for High-valued targets/objectives			x	
4.2	Search for Allies.				

MTAT REPORTS

Sample Resource Report

Resource List

1 PLMS

The Unmanned System at the heart of the operation.

Resource Type: Human

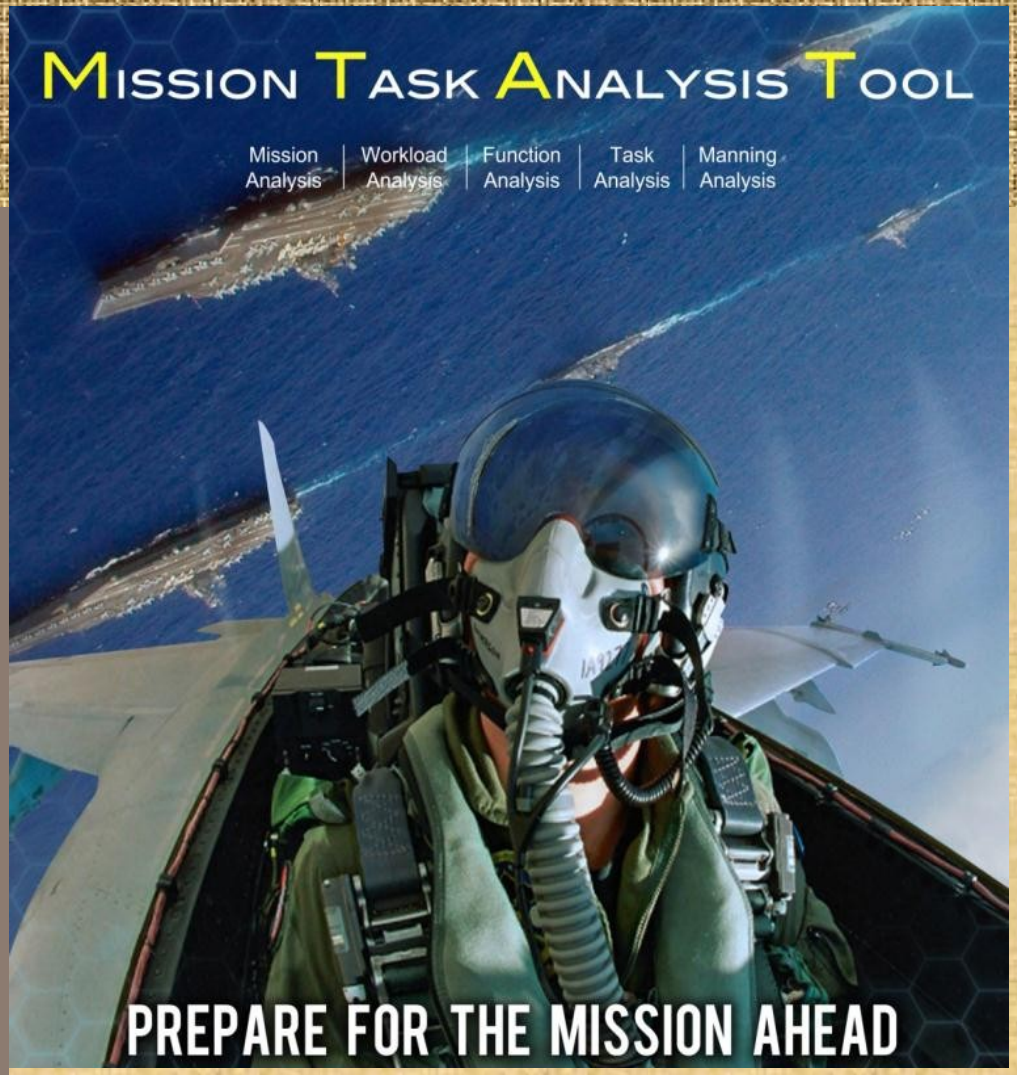
Relates To:

System Function	Task	KSA
1. Take off	*1.* Engine System Start Up	*1.* PLMS KSA
2. Mission Launch and arrive on station	*2.* Camera System Start Up	
4. Monitor Area	*3.* Arrive at rally point	
4.1. Monitor and Search for High-valued targets/objectives	*4.* Detect	
4.2. Search for Allies.	*5.* Identify	
5. Establish Connection between PLMS and P-8A.	*6.* Track	
5.1. Diagnose Connection Problems	*7.* Report	
6. Maintain surveillance and Radio communication	*9.* Land Aircraft	
8. Monitor Assault	*10.* Swap Aircraft	

Scenario Resource Matrix

Name of Resource	PLMS Support for Amphibious Assault	Retasking	Long-Dwell Surveillance	Data Mission
Mission Commander (MC)	x	x	x	x
Sensor Operator	x	x	x	x
P-A	x	x	x	x
Pilot	x	x	x	x
Strike Force	x	x	x	
PLMS	x	x	x	x
Firescout	x	x		
TSC Intelligence Officers	x	x	x	x
ACR		x	x	x

MTA TREPORTS



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